

# EEES NEWS

## Student News

Spring, 2009

### AWARDS

<b>Hailian Liang</b>	2009 Environmental Scholar Award
<b>Dan Matz</b>	2009 Environmental Scholar Award
<b>Sam Sarkar</b>	2009 Environmental Scholar Award
<b>Darryl Jones</b>	2009 L.G. Rich Water Environment Association Fellowship
<b>Jennifer Horner</b>	2009 A. Ray Abernathy Water Environment Association Fellowship
<b>Curtis Gebhard</b>	Graduate Teaching Assistant Award in Geological Sciences
<b>Kirk Ellison and Ben Robinson</b>	Thomas F. Logan, Jr. Geology Merit Award
<b>Jamie Ryan</b>	Jean G. Stillwell Award



**CONGRATULATIONS TO ALL!**

**Jesse Addison's** Master Thesis entitled "THE FORMATION OF HALONITROMETHANES IN WASTEWATER TREATMENT PLANT EFFLUENTS" was selected to receive the American Water Works Association's (AWWA) Second Place 2009 Academic Achievement Award for the best Master Thesis. Each year AWWA recognizes two MS and two Ph.D. theses after a nationwide competition. The award will be formally presented during the A. P. Black Research plenary session at the AWWA Annual meeting in San Diego on Tuesday, June 16, from 8:00 to 8:45 a.m. The award will include a plaque and a \$1,500 check. **Dr. Tanju Karanfil** served as Jesse's advisor.

**Dave Hisz** won the Outstanding Student Paper Award (Hydrology Section) for his presentation entitled "Hydromechanical responses in dipping fractured mudstones at the NAWC site, West Trenton, N.J." at the 2008 Fall Meeting of the American Geophysical Union in San Francisco. This will be announced in the publication of EOS, the weekly newspaper of AGU, and comes with a formal certificate of achievement from AGU. **Dr. Larry Murdoch** serves as Dave's Advisor.

**Darryl B. Jones** was selected by American Water Works Association (AWWA) as the 2009 LARS Ph.D. Fellowship recipient. Every year, AWWA gives one award for M.Sc. (\$5,000 one time

funding) and one for Ph.D. (\$7,500 one time funding) after a nationwide competition. Darryl will receive his award at the AWWA National Meeting luncheon in San Diego in June, where he is also scheduled to give an oral presentation from his research at Clemson. **Dr. Tanju Karanfil** serves as Darryl's advisor.

**Viet Dang** won third place for his platform presentation "**The fate of chiral PCBs congeners in the aquatic environment**" at the Carolinas Society of Environmental Toxicology and Chemistry in Charleston, SC, March 27-28. **Dr. Cindy Lee** serves as Viet's advisor.

On Saturday, April 11 the Department of Environmental Engineering and Earth Sciences hosted a luncheon at the Madren Center to recognize some of our best geoscience students. **Jamie Ryan** is the 2009 recipient of the Jean Stillwell Award, which is given by the Geology faculty to the outstanding junior majoring in Geology. This award is named in memory of Jean G. Stillwell, who graduated from Clemson in 1982 with a BS degree in Geology, then taught as a Lecturer in Geology until she died of cancer in 1993. The award is an Estwing rock hammer engraved with the student's name. Jamie is double majoring in Physics & Astronomy and in Geology, and is a member of the Calhoun Honors College. Last fall he presented "Focal Mechanisms for Deep Crustal Earthquakes in the Central Foothills and Near Yosemite National Park in the Sierra Nevada, California" at the American Geophysical Meeting in San Francisco. **Kirk Ellison** and **Ben Robinson** are co-recipients of the Thomas Logan, Jr. Geology Merit Award for 2009. This award is presented to a senior majoring in Geology with outstanding achievement in Geology and possessing personal attributes necessary for success in this discipline. It is given in memory of Thomas F. Logan, Jr., a 1965 Geology graduate of Clemson University; he was killed in an automobile accident just prior to receiving his PhD from the University of Georgia. Both Kirk and Ben also are members of the Calhoun Honors College and are pursuing Departmental Honors in Geology. They are co-directors of the Bahamian Ooids creative inquiry project, which they initiated on their own. Both received a framed certificate and a cash award. **Curtis Gebhard** is winner of the 2009 Graduate Teaching Assistant Award in Geological Sciences. This award is given to the outstanding teaching assistant for introductory geology laboratories, as determined by students enrolled in those laboratories. Student comments on his teaching evaluations make it clear that Curtis is an inspiring lab instructor. The award consists of a framed certificate and a one-year subscription to the Journal of Geoscience Education. **Dr. Richard Warner**, faculty representative on the College of Engineering and Science Scholarship, Honors and Awards Committee, presented the awards. Parents of the award recipients, along with other family members and several of the faculty from EEES were on hand to celebrate the achievements of these outstanding students.



The following link is for the blog that **Dan Matz** has set up for his research trip to India. The project will study the water budget in a rural Indian village called Salri in the state of Madhya Pradesh. The five month long project will consist of traditional hydrological monitoring and modeling in conjunction with electromagnetic induction to determine the overall effect of a water harvesting structure on the local hydrology of the area and help determine sustainable water management practices. "The blog will update my adventures and progress on the research project. Please check it as often as you can and feel free to post comments!!" [www.dansindiablog2009.blogspot.com](http://www.dansindiablog2009.blogspot.com)

**Dr. Karanfil's Research Group** attended 19th Annual SC Environmental Conference (March 21 - 25). They presented six posters and five of them won awards.



**Jia Hu:** Halonitromethane formation potentials in drinking waters. Award: Fresh Ideas Award.

**Ting Shao:** Influence of Carbon Nanotubes structural Characteristics on the adsorption of Synthetic Organic Compounds. Award: Student Research Paper Winner.

**Darryl Jones:** Formation and Control Iodo-trihalomethanes in drinking water treatment. Award: First Place Poster Award.

**S. Sule Kaplan Bekaroglu:** Control of DBP's with GAC Adsorption for Compliance with Stage 2 D/DBPR. Award: Second Place Poster Award.

**Amer Kanan:** DBP Formation in indoor Swimming Pools. Award: Third Place Poster Award.

**Meric Selbes:** Leaching of Organic and Inorganic Constituents from Scrap Tires.



EEES has once again has joined up with Adopt the Highway to make South Carolina a little more beautiful. The road that the graduate students have adopted is on Fants Grove Road from the intersection at Cherry Road to the Bridge that crosses 18 mile creek. The first clean up was on Friday, April 10 and there was a fantastic turnout of about 20 students and faculty. We broke off into two groups and each headed our separate ways, picking up bags, fast food wrappers, cigarette butts, the occasional tire, beer cans (empty and full!), and much more. Everyone had a great time, and it was awesome to see everyone come together to help

keep our roads a bit cleaner. The next cleanup will be this coming fall, and hopefully we will have much less trash to pick up!!

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Who said Grad School is all work and no play!! Students enjoy a relaxing night of pizza at Mellow Mushroom and then bowling at the student union.



1st picture: Left front: **Dan Matz, Arika Bridhikitti, Amy Hixon, Joel Kohn, Selcen Kose, Meric Selbes, Darryl Jones, Pol Pumkaew**

2nd picture: **Meric Selbes, Francisco Barajas, Dinora Monroy**

3rd picture: **Todd Miller, Michael Lilly, Tara Matheny and Will Nading**

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Nine current and former members of the Environmental Engineering and Earth Sciences (EEES) department at Clemson University took part in the Charlotte Thunder Road Marathon as three separate relay teams. Faculty team: **Drs. Treavor Kendall, Brian Powell, Shelie Miller**; Student team: **Dan Matz, Amy Hixon, Tara Matheny**; and Alumni team: **Darryl Jones, Dina Mauldin, Jim Chamberlain**. The student team took off with a blazing start and was still leading by the second stage of the race. However, the faculty team, calling themselves “The Tenure Track Club”, fought back tenaciously and jolted into a hair-thin lead at the end of the race, winning (among the three teams) with a total finish time of 3:56:16. Here is **Drs. Shelie Miller and Brian Powell** flaunting the winning trophy!!



Seven of **Dr. Larry Murdoch’s** students (**Dave Hisz, Richie Hall, Seth Shantz, Curtis Gebhard, Vijay Santikari, Xiaoling Liu, and Barclay Sudderth**) gave presentations at the Clemson Hydrogeology Symposium.

**Nicole Fahrenfeld, Dr. John Coates and Dr. Alan Elzerman** presented a poster paper in the Environmental Division at the ACS meeting in Salt Lake City in March, 2009 entitled “Fecal Coliform Source Identification Using Chemical Tracers.”



**Xin Xu** gave birth to her daughter Niuniu on 02/09/2009, 07:08 am. It was the due date! She weighed 6 lbs, 10 oz, and she's 21 inches long. Her English name is Grace Cao, and Chinese name is Yihan Cao. She is healthy and fabulous!



Bin Yang gave birth to her 04/21/2009 at 8:59 am. She is 6 lbs 11.9 oz, and 20 inches long. Her English name is Claire Long. She



daughter, Claire. Claire was born on lbs 11.9 oz, and 20 inches long. Her is a healthy and fabulous baby girl!

## Department Events

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### 2009 Clemson Hydrogeology Symposium

The 17th annual Clemson/Dave Snipes Hydrogeology Symposium was held on April 2, 2009 at the Madren center here on the Clemson campus. The first symposium took place in 1991 and was originally conceived by former geology professor Dave Snipes as a venue to showcase the research conducted by the then fledgling Hydrogeology program.

This year's event attracted over 370 attendees and 26 exhibitors. The attendees were a mixture of environmental consultants, state level regulatory officials, federal researchers, and academics. The opening remarks were made by **Dr. Tanju Karanfil** and the Dean of the College and Engineering and Science, **Dr. Esin Gulari**. The keynote presentation was made by Dr. Peter Cook of Australia. Dr. Cook is the 2009 Darcy Lecturer. He talked about the use of environmental tracers for increasing confidence and reducing uncertainty in groundwater model predictions.



Exhibitors talking with an attendee at the Madren Center

Three concurrent sessions were held during the day and 45 presentations were made on a wide variety of topics. Many of the presentations were made by Clemson faculty, EEES graduate students and geology undergrads. General hydrogeologic topics covered included groundwater remediation techniques, aquifer and fracture characterization, sampling procedures, and modeling. There was a special session on constructed wetland treatment systems moderated by **Dr. Jim Castle**. **Dr. Ron Falta** talked about CO<sub>2</sub> Sequestration and **Dr. Larry Murdoch** discussed the particulars of characterizing

the Homestake Mine in South Dakota that will be used to study neutrinos. As part of their Creative Inquiry course, geology undergrads presented research on Bahamian ooids, stream characterization, and lead concentrations in dove hunting fields.

In addition to the day of presentations, fields trips associated with the Symposium were run on April 1 and April 3 that offered attendees an opportunity to experience the geology of a nearby locale. This year's trip was a geologic investigation of the Highlands/Cashiers, NC area. Bill Burton of the United States Geological Survey from Reston, Virginia led the field trip.



Bill Burton of the USGS explaining the geology found at Bridal Veil Falls near Highlands, North Carolina

**Scott Brame** was again the leading organizer and coordinator of the Symposium this year.

## Climate Change Discussion

Scientists Michael C. MacCracken and John R. Christy presented contradictory viewpoints on the primary drivers of global warming on April 16 at the Strom Thurmond Institute, as the fourth and final seminar organized by retiring Dempsey professor **Dr. Bob Fjeld**, and underwritten by the Jerry E. and Harriet Calvert Dempsey Endowment. **Dr. Fjeld** was appointed the Dempsey Professor of Waste Management in 1996 and has periodically organized and hosted seminars, open to the public, on a range of environmental topics.

In addition to the Dempsey Endowment, the event was co-sponsored by the Strom Thurmond Institute, the Clemson Environmental Institute, and the Department of Environmental Engineering and Earth Sciences. Clemson alum and benefactor Jerry E. Dempsey suggested the topic as a way to address the layman's confusion about global warming due to the conflicting and often heated rhetoric of the media and policy makers.

Dr. MacCracken is chief scientist for climate change programs with the Climate Institute in Washington, D.C. He is co-editor of the 2008 book, "Sudden and Disruptive Climate Change: Exploring the Real Risks and How We Can Avoid Them" and has been heavily involved in the development of the U.N. Intergovernmental Panel on Climate Change assessment reports. Dr. John Christy is director of the Earth System Science Center at the University of Alabama in Huntsville. He is skeptical that climate change will be swift and sweeping based on global temperature data sets that he developed with Dr. Roy Spencer from microwave data observed from satellites beginning in 1979. Dr. Christy has contributed to several IPCC assessment reports.

MacCracken and Christy outlined their positions in their opening presentations, responded to each other's remarks and then were questioned by panelists **Drs. Cindy Lee** (EEES), **Fred Molz** (EEES) and Charles Gooding (ChemE). Questions by the panelists were followed up by questions from audience members, including **Dr. Les Grady**, Professor Emeritus (EEES). The two-hour event was moderated by Donna London, Director of the Jim Self Center on the Future at the Strom Thurmond Institute. The event was open to public and the Strom Thurmond auditorium was filled by students, faculty and attendees from public.

The DVD for this event is available through **Sandra Sanderson** ( [sclipp@clemson.edu](mailto:sclipp@clemson.edu) )

## Staff News

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Please welcome **Anne Cummings** who started on Monday, January 26, 2009 as the Department Lab Manager. Anne will be in charge of all our department laboratories and analytical instruments. Anne will work very closely with the EEES faculty and students to maintain and supervise our research infrastructure and support teaching of some laboratory courses. She has a new office space in the Lab section of the L.G. Rich Lab.

**Junhong Shan** from Singapore joined the department to work as a Post-Doctoral Research Associate in Dr. Tanju Karanfils' research group.

**Faculty, Staff and Students** mourn the loss of **Kathleen Hardeman**. Kathleen was an employee of Clemson University in the Custodial Care Department, and was a part of the EEES Rich Lab cleaning staff. She was dearly loved by all. Kathleen passed away after a brief illness on January 18, 2009 at the Rainey Hospice House. She was born November 21, 1945 in Greenville, South Carolina. Faculty, staff and students donated more than \$500 to a fund in her memory to support student activities.

**Margaret Richey** who was also an employee of Clemson University in the Custodial Care Department, and part of the EEES Rich Lab cleaning staff retired in March. She will be sorely missed. The faculty and staff held a retirement breakfast for her.



## Faculty News

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**Dr. Robert A. Fjeld**, the Jerry E. and Harriett Calvert Dempsey Professor of Waste Management, retired on March 25, 2009. Dr. Fjeld initiated the “nuclear option” in the department in 1980. Since that time, Dr Fjeld has been responsible for graduating 61 MS students, 7 PhD students, and mentoring 4 post-doctoral assistants. Dr. Fjeld can be credited with bringing over \$4.5M in research dollars to the University. The outcomes of Dr. Fjelds’ research endeavors has been published in over 60 referred publications, 40 conference proceedings papers, 20 research reports, and 90 professional presentations. A capstone achievement in Dr. Fields’ career is his textbook entitled, “Quantitative Environmental Risk Analysis for Human Health”, which is coauthored with a Keith L. Compton and Norman A. Eisenberg.

Dr. Fjeld earned his B.S. degree in Nuclear Engineering from North Carolina State University in 1970, a M.S. in Nuclear Engineering with a minor in air pollution from The Pennsylvania State University in 1973, and a Ph.D. in Nuclear Engineering from The Pennsylvania State University in 1976. Dr. Fjeld was an assistant professor at Texas A&M University for 4 years before coming to Clemson. He is a licensed Professional Engineer and a Fellow of the Health Physics Society. He has served on numerous professional committees and review panels as well as editor for numerous journals. Although officially retiring from classroom teaching, Dr. Fjeld plans to continue his research endeavors in the environmental aspects of nuclear technologies, specifically the transport and measurement of radionuclides in the environment. In his spare time he plans to spend more time with his grandchildren, in his garden and on his bicycle.



**Dr. Jim Castle**, professor in EEES, and Dr. John Rodgers, professor in Forestry and Natural Resources, were recently awarded more than \$800,000 to find economical and environmentally sensible ways to treat waters that come out of the ground during oil and natural gas production. Funding is from the U.S. Department of Energy and Chevron of Houston, Texas. Department of Energy experts say that “co-produced water comprises 98 percent of all waste generated by U.S. oil and natural gas operations. Handling and disposal of this water is the single greatest environmental impediment to natural gas and oil exploration and production.” Castle and Rodgers are developing constructed wetland systems to treat the contaminated water for reuse. In addition to reducing environmental risks, constructed wetland treatment systems generate treated water reusable for many purposes, including irrigation, livestock watering, cooling-tower water, municipal water use, domestic use, treated sewage discharge dilution and support of critical aquatic life and wildlife.

**Dr. David Freedman** will present four papers at the Tenth International Battelle Symposium on In Situ and On-Site Bioremediation, Baltimore, MD (May 5-8, 2009), along with doctoral students **Huifeng Shan** and **Vijai Elango** and undergraduate researcher Audrey Bone:

**Shan, H. and Freedman, D. L.** "Characterization of a Bioaugmentation Culture for Treating High Concentrations of Halomethanes."

**Elango, V.,** Cashwell, J., Bellotti, M., and **Freedman, D. L.** "Evaluation of Anaerobic  $\gamma$ -HCH Dechlorination by Enrichment Cultures."

**Elango, V.,** Cashwell, J., Bellotti, M., and **Freedman, D. L.** "Aerobic Cometabolism of Trichloroethene with Benzene and Chlorobenzene as Growth Substrates."

Bone, A., Lehmicke, L., and **Freedman, D. L.** "Dichloromethane Inhibition of Trichloroethene Reductive Dechlorination Activity in Bioaugmentation Cultures."

In addition, **Dr. Freedman** will be chairing a session entitled "Anaerobic Biodegradation Improvements."

**Dr. Karanfil** was given the 2008-2009 membership award by the SC American Water Works Association at the South Carolina Environmental Conference (March 21-25) recognizing his continuous efforts for educating and preparing young professionals to water and wastewater industry. **Dr. Karanfil** presented an invited paper entitled "Suggestions for Giving Successful Presentations at Conferences" at the Young Professional Session at the Conference.

On April 10<sup>th</sup>, Dr. Robert G. Ford of the US Environmental Protection Agency gave the inaugural seminar for the **Alan W. Elzerman Seminar Series**. The Elzerman Seminar Series was established to honor the contributions of **Dr. Elzerman** to the department, university and environmental chemistry by **Dr. Cindy Lee and Riley Stevens**. Each year for the next five years, two alumni from the department will present a seminar about their career in environmental engineering and science or hydrogeology.



**Dr. Jim Navratil**, Faculty Emeritus, just returned from 6 weeks in the Czech Republic where he taught a short version of my actinide chemistry course to graduate students at the Technical University in Prague. Dr. Navratil also advised a PhD student on molten salt oxidation research at the Czech Nuclear Research Institute. Jim says "It was a great experience, and we think Prague is one of the most beautiful cities in the world".

**Dr. Larry Murdoch** was voted onto the Executive Committee of the Board of Directors of CUAHSI (Consortium of Universities for the Advancement of Hydrologic Sciences Inc). CUAHSI has more than 100 member universities and is an important voice in the hydrologic community (<http://www.cuahsi.org/>). In March, Dr. Murdoch co-chaired a CUAHSI workshop to evaluate the science goals of a community hydrologic modeling platform, which promises to improve the modeling capabilities available to the hydrology community. Earlier in the semester, Dr.

Murdoch helped to organize the science presentations at an NSF review of the Homestake DUSEL (Deep Underground Science and Engineering Laboratory) project, a major \$0.5B science laboratory that is being proposed for construction in the Homestake Gold Mine (more about DUSEL here: <http://www.lbl.gov/nsd/homestake/>)

## Alumni News

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**Stephen P. Graef, Ph.D., P.E., BCEE** (EE&S, Ph.D. '76) was selected for the **2009 Stanley E. Kappe Award** which is presented by the American Academy of Environmental Engineers to the Board Certified Environmental Engineer who has performed extraordinary and outstanding service contributing to significant advancement of public awareness to the betterment of the total environment.



**Richard Edwards** (EE&S, MS '74)

It's a long way from Kalamazoo to Kampala, Uganda, but for Richard Edwards, the opportunity to use his knowledge and expertise to help improve the local infrastructure is an exciting prospect. Richard, who is Director of Pfizer's Waste and Wastewater Networks and recently celebrated his 30th anniversary working with the company in the environment field, will be traveling to Kampala, Uganda later this month to work with Water Aid as a Global Health Fellow.

Since 2003, nearly 200 colleagues have participated in Pfizer's Global Health Fellows program — a recognized "best in class" model of international corporate volunteerism — demonstrating the company's commitment to global health by sending highly skilled employees to volunteer their time and skills for four to six months with nongovernmental organizations in 38 countries.

"The environmental field has always been about doing good for us all and sometimes we forget the great value of our 'first-world' infrastructure. Helping others make the improvements is just part of my job and one that I am happy to share wherever needed," Richard said. "The more I saw of Water Aid; the more I saw it as a great fit." Water Aid's extensive network and resources span 17 countries in Africa and Asia and play a key role in the wider international WASH campaign, which advocates for water, sanitation, and hygiene for all. With Water Aid in Kampala, Uganda, Richard will support local efforts in urban waste and wastewater planning/project execution, and help establish viable sanitation programs. The work will require the implementation of pilot projects, training and assistance in additional communities to replicate the work across the country.

Richard is more than prepared for the assignment. He brings his considerable experience in corporate environment, health and safety issues, waste disposal and management, and water/waste data keeping and use to Water Aid-Uganda - not to mention his can-do and no-nonsense approach. A graduate of Brunel University in London with a degree in chemistry, Richard earned an MBA from Washington University in St. Louis and a Master's in environmental engineering from Clemson University.

Hassan M. Pressley (EE&S MS '04) will be getting married on August 1, 2009 (<http://www.hassanandmia.weddingwindow.com>).



**Pramoth Chandrikamonan Mohan** (EE&S MS '04) and Sangeetha Mohandas married on March 23, 2009

EEES gives a warm welcome to Jonathan Yu Tan, son of **Dr. Hui Tan** (EE&S Ph.D. '02). Jonathan was born March 14, 2009; he weighed 7 lb 14 oz, and is 20 inches long.



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*The next issue will be published in September 2009. Please send your submissions for your activities during summer to Jan Young ([ej@clmson.edu](mailto:ej@clmson.edu)) latest by August 28, 2009. (Please do not forget to take pictures).*

**THANK YOU!**